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No Pain All Gain.(restaurants linking with food distributors using Efficient Food Response systems)

Sheridan, Margaret; Matsumoto, Janice

Restaurants & Institutions , Volume: 109 , Number: 5 , Page: 57 , Feb 15 1999

Link operators by computer with food distributors and what happens? Paper disappears. Food costs drop and efficiency rises. Inventory becomes a breeze.

For his colleagues in the foodservice business, it is excruciating. But ask Executive Chef John Woods about the monthly inventory at Rosemont Suites, a 290-room hotel outside Chicago, and he'll say it is "a breeze."

Ah, the monthly migraine. It's time-consuming, labor-intensive and slow. Every detail counts and every slip-up costs. And it wasn't that long ago that Woods also felt the pain.

Before he installed a computerized inventory program that links the hotel kitchen to foodservice distributors and manufacturers, the chore took 12 hours and four people. Now, Woods does it himself in 90 minutes, using a hand-held laser scanner that reads bar codes on bottles, cases, packages, cartons and cans. The electronic data are digested by the computer. Inventory is adjusted and orders are placed immediately, based on the most current prices from distributors.

The software enables Woods to track purchases, compare prices and minimize food waste and storage needs. He can track sales daily or hourly. Since inventory is done electronically, labor and payroll are reduced by an estimated \$25,000 yearly.

"Most chefs aren't that familiar with the system," Woods says. "They assume it's expensive and very complicated. It's not. Anyone who uses a PC can do it." Though inputting recipes and inventory is time-consuming in the beginning, Woods insists it's just data management.

CRITICAL LINKS

"It" is part of Efficient Food Response (EFR), the buzzword for a system that simplifies life for operators, distributors and manufacturers.

EFR is rooted in the supermarket industry and the softgoods market, both of which rely on computer technology, bar-coding and complete inventory control. The EFR project, sponsored by 13 industry groups (including the National Restaurant Association and the American School Food Service Association), was created to help foodservice operators, distributors and manufacturers trim an estimated \$14.3 billion in costs annually.

EFR basically is a paperless way to buy, sell and order goods. A key element is a computerized inventory system that links buyers to food distributors for purchasing, billing and inventory. It requires a PC, laser scanner and inventory control software. Foodstuffs and supplies, including produce and liquor, are ordered on-line and paid for by electronic transfer. The goods have been tagged by participating

vendors with bar codes that are read electronically by scanner. Information immediately goes into the computer, updating the data base for inventory control.

For operators, the computerized system means speedier ordering and inventory management, freeing more time to serve customers. It also results in timelier, more accurate deliveries, reducing warehouse levels and increasing back-of-the-house work space. Eventually distributors will be able to post up-to-the-minute prices, allowing comparison shopping before on-line orders are placed.

What makes Woods an enthusiast is the bottom line. Since the system was installed at Rosemont Suites two years ago, he has cut food costs by 3 points (or 10%). "[A 3-point savings] doesn't seem like much. But it adds up in the long term" he says. For most operators the software pays for itself in less than a year.

ROLE MODEL

Woods was introduced to the system by Pierce Johnson, of Johnson Technologies, a consulting firm in River Forest, Ill. "The grocery industry has used EFR successfully for years," says Johnson, a former general manager for a French-based hotel group. "But up until three years ago, the software wasn't available for the restaurant industry. The mainframes were out of the budget."

What makes the timing right is the power of today's PCs and their affordability, says Johnson. The software is user-friendly and its applications are many. Woods creates, changes and costs out recipes with software designed by Johnson, who modeled it after grocery industry programs.

USER-FRIENDLY

Whether the menu changes weekly or twice a year, the system works, Woods insists. Once the name of a seasonal fruit or fish is added to the computer, it's there for good. Woods compares the process to adding and updating addresses in the computer.

Woods and Johnson agree there's less error in data entry and say the new software makes it easier to forecast needs. "The user knows what vendors are selling and their stock. A chef can reduce stock and keep storage down to 2%. You can forecast within 99% accuracy," Johnson says.

Not everyone is buying into the new technology. Vendors unfamiliar with EFR are threatened, according to Brian Harron, a Phoenix-based restaurant and management consultant. "Some vendors resist because they want to protect the allegiance to their customer." But such loyalty doesn't necessarily deliver savings.

With inventory-based software, the chef can study up-to-the-minute prices from many distributors. "It allows him to make independent decisions, not biased ones," says Harron.

SIZE HELPS

Economies of scale have definite clout in the purchasing field. In one pilot project, Orlando, Fla.-based Darden Restaurants eliminated an importer's profit margin on vinyl gloves by ordering directly from the source--with the cooperation of its chief distributor.

"Our agent in Asia sourced the gloves, we negotiated the price and our distributor does the rest--they make the purchase and arrange for distribution," says Ellen Guse, manager of logistics services for

Darden. "This creates revenue for them, but it's still more economical for us than paying the importer's profit margin."

No small change, this. The gloves are used by employees in all 1,100-plus restaurants in the Darden chain, including Red Lobster, The Olive Garden and Bahama Breeze.

Other EFR initiatives at Darden: "We're working on 'redistribution' of slower-moving food items by holding inventory at a central site, for cheaper transportation," Guse says. "Another is in consolidating orders from various manufacturers into single large shipments."

JURY OUT

Many operators admit they know little about EFR. Others are not yet convinced it's for them. David Megenis cheerleads anything that helps operators economize and operate efficiently. But the director of purchasing for Restaurant Associates in New York questions the value of EFR for his group of 12 restaurants.

"If I had a hotel, I'd use it in a minute," says Megenis. "The food and beverage needs [of a hotel] are constant, but guests change. Our menus change according to needs of the same customers we serve 280 times a year."

The challenge facing Scott Armstrong, vice president of finance, Lawry's Restaurants Inc. Pasadena, Calif., is getting enough distributors on-line. Each of the six Lawry restaurants deals with 30 to 50 vendors. "It's complicated because each restaurant has its own distributors for liquor, wine, dairy and ice cream," he says.

Armstrong also questions where the savings will come from. "Trading data entry time for system maintenance requires labor, regardless" he says.

And yet, distributors are intent on driving EFR into the foodservice industry. "They are the ones who can see the inherent efficiencies and economies," says Tim Ryan, executive vice president of the Culinary Institute of America and an executive board member of the EFR committee. "Operators will eventually be able to order from distributor, just by logging into their computer."

UNDER CONTROL

Paul Fehribach knows exactly what he's saving. His sanity, for starters. "Inventory is just one of my jobs," says the general manager of Hi Ricky, a 100-seat noodle shop and sate bar in Chicago. "Every time I'd do inventory, I'd scream to myself to hire a second manager. Now, it's not necessary."

Many of the 25 vendors he uses are small businesses that sell Asian ingredients. The software he uses, developed by Pierce Johnson, produces bar codes for each ingredient. Whether he orders an exotic Thai fish sauce or Illinois-grown sprouts, there is no problem, says Fehribach.

The system helps him become a more efficient manager. He completes inventory of food and liquor in two hours instead of one day. "There's no misunderstanding in ordering due to language or translation. It makes life easier for my vendors."

Fehribach doesn't miss the paperwork or the sore hand. "My fingers used to drop off from writing down every single item. Then, add all the interruptions. Inventory wasn't exactly error-free."

NEED DOUGH

Finding funds to implement the system is the challenge facing institutional operators such as Dee Hardy, director of dining services, University of Richmond, Richmond, Va.

"I would love to be able to do inventory with scanners, but it's still cost-prohibitive. We won't invest in a barcode program unless it's compatible with our current menu management system," she says. Foodservice at Richmond, a \$6 million-a-year operation, ranges from a full-service production kitchen to cash operations to convenience stores. "But given the increasing labor problems, I am definitely interested," she adds.

Students at the Culinary Institute of America also see the value. Ryan has given several lectures over the past year about EFR, while students in purchasing and computer classes are introduced to various inventory management software systems.

"Since it's not fully implemented in the restaurant industry, we're still talking in generalities," Ryan says. "But the students view EFR as a no-brainer. 'Of course, this is how foodservice should work,' they say."

RELATED ARTICLE: Open Sesame

A random phone check reveals most operators are unfamiliar with EFR, but want to know the basics. Pierce Johnson, a technology consultant, addresses some common concerns.

Q. LarGer restaurants and chains are more computer-savvy than many small operators. Is that an obstacle?

A. EFR software requires basic PC skills--inputting and managing such information as products, prices and recipes. Those familiar with Windows can use the software.

Q. If you have a dozen restaurants where each chef does his own purchasing, how can one automated system work?

A. The software is a client-server program. Multiple users can access the program at the same time.

Q. How about security?

A. Users are secured and connected to vendors by a log-in name and password.

Q. Can the software handle menus that change every other day and rely on seasonal foods?

A. Recipes and menus can be created and changed in minutes using drag and drop capabilities.

Q. What of the operators whose volume is too small to use big distributors. What sort of cost-saving partnerships are available?

A. Operators can leverage buying power as a group by linking with a food broker or buying consortium. Agreements are set up with brokerage firms and food-buying co-ops.

Q. Where can I get more information?

A. Check out the EFR Web site at www.efr-central.com.

Does your operation use EFR? R&I would like to hear about it: making the switch, the savings, the benefits. E-mail us at riedit@cahners.com.

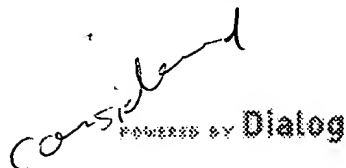
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Millenium-proof supply chain

Michel, Roberto

Manufacturing Systems, v16n4, Page: 65-72, Apr 1998

No matter how disciplined manufacturers are in addressing the Year 2000 problem within their own systems, one nasty fact remains: even if legacy or packaged enterprise systems are millennium-ready, such a large amount of data comes from external sources that Year 2000 risks still loom unless trading partners address inter-system exposures. This daunting realization has managers working to ensure compliance of external links with key trading partners. Concern over external exposure is justified, say experts. At Levi Strauss & Co., the first step is to get its own systems in order. The Year 2000 fixes are expected to be in place by December, but the company is also assessing external risks. Testing electronic data interchange translation software between the manufacturer and its key retailers is underway, but collective, industrywide testing would be more efficient.

Headnote:

Levi Strauss & Co. and others see Year 2000 bug as commerce threat

NO MATTER HOW DISCIPLINED manufacturers are in addressing the Year 2000 problem within their own systems, one nasty fact remains: even if legacy or packaged enterprise systems are millennium-ready, such a large amount of data comes from external sources that Year 2000 risks still loom unless trading partners address inter-system exposures. This daunting realization has managers such as Charles "Chas" Snyder, director of Year 2000 initiatives for Levi Strauss & Co., the San Franciscobased apparel giant, working to ensure compliance of external links with key trading partners.

"Some manufacturers are increasing their focus on supply-chain compliance, but most are focused internally, and not worried a great deal about external links," Snyder says.

Concern over external exposure is justified, say experts. The Year 2000 problem-an inability to cope with dates in the new century that stems from the use of two-digit date fields for years rather than four-digit date fields-can affect not only backbone systems such as enterprise resources planning (ERP) software, but also may lurk in older electronic data interchange (EDI) formats, EDI translation software, or applications that link suppliers and customers, such as vendormanaged inventory (VMI) systems.

While experts contend that newer EDI standards and EDI software shouldn't pose a problem, large players in supply chains are leaving nothing to chance, and are addressing EDI as part of Year 2000 projects.

At Levi Strauss, the first step for the \$6.9 billion branded apparel maker is to get its own systems in order, Snyder says. The company's business applications primarily are mainframe-based, and most are

being remediated to properly handle four-digit year fields. These Year 2000 fixes are expected to be in place by December, but the company also is assessing external risks.

"Our strategy is to pay closest attention to the compliance status of retailers that represent our biggest sources of revenue," Snyder says. "While we have a high confidence level in the systems of these large customers, we exchange such huge volumes of data with them via EDI, and rely on them for such large amounts of revenue, that we must work very closely with them to eliminate Year 2000 risks."

Short of core problems within its trading partners' business systems-such as an inability to process orders or record payments-EDI has become a focus of external risk assessment for Levi Strauss, says Snyder. Testing EDI translation software between the manufacturer and its key retailers is underway, but collective, industrywide testing would be more efficient, Snyder says. To this end, the company's EDI manager has become involved in a guidance document about EDI translator testing recently published by the National Retail Federation (NRF), Washington, D.C.

"Much testing of EDI could be avoided if the industry is willing to work together to test EDI translators," Snyder says.

The Automotive Industry Action Group (AIAG), a Southfield, Mich.-based not-for-profit association representing automakers and automotive suppliers, also is involved in mitigating Year 2000 risks between customers and suppliers. The Big Three automakers, under the auspices of AIAG, have posted a directive on EDI compliance on AIAG's Web site. And AIAG's Year 2000 task force, in conjunction with procurement managers with the Big Three, sent out an extensive Year 2000 compliance survey last fall to suppliers who collectively represent 50,000 sites in the automotive supply chain.

The NRF also is sending out a survey this spring, though it's much less extensive than AIAG's, says Kathy Hotka, the federation's vice president of information technology. "The survey is just nine questions that basically ask companies if their systems are compliant," Hotka says. "When you have companies as diverse as Home Depot and Starbucks involved in the survey's cover letter, it opens up the lines of communication about Year 2000, and lets trading partners know how widespread the concern is."

The message that powerful players in supply chains are spreading is that they insist on knowing trading partners' state of Year 2000 readiness. Manufacturers that can respond they've implemented compliant ERP systems, such as Kenneth Cole Productions and Collins & Aikman, will have gone a long way toward satisfying trading partners' concerns. Still, exposure from external links must be addressed.

Real EDI risks?

The long and successful history of EDI as a technology that has been customized to suit the needs of specific industries may be EDI's main exposure to Year 2000 risks, say some experts. Others, however, downplay these risks.

"EDI systems should not be a problem," says Harry Tse, research director with the Yankee Group, a Boston-based research firm. "Most standards have been brought into compliance over the last 10 years, and the new electronic commerce packages from vendors such as Sterling and Harbinger are Year 2000 compliant."

Manufacturing resources planning (MRP II) systems built prior to 1990 pose a greater threat among trading partners than EDI, Tse contends. However, "If a manufacturer is using a pre-1990 MRP II

system, and they have direct dial-up connections with trading partners, there could be Year 2000 problems," Tse says.

Not every manufacturer uses packaged electronic commerce software, notes Kevin Ashworth, director of Resolve 2000, a Year 2000 compliance service from Keane Inc., a Boston-based software services firm. "Some companies have built EDI software internally over the years, and these custom-built solutions could have millenium problems," he says.

To make matters more complex, in some cases suppliers must be ready to handle either two-digit or four-digit date fields from the same customer. For instance, in a memo last June from AIAG, automotive suppliers were advised that some of the Big Three automakers' systems will continue to use two-digit date fields into the new century, while some of their systems will use fourdigit years. A "fixed window" technique is proposed by the automakers to properly interpret two-digit years. The number "51" would be at the center of the window, with two-digit years of 51 or greater interpreted as having a "19" in front of them, and twodigit years of 50 or less would have "20" prefixed to them.

"Electronic commerce user beware" appears to be the catch phrase for manufacturers, although new EDI standards and electronic commerce software should help. For instance, NRF's guidelines for EDI translator testing excludes a new century-compliant set of EDI transactions for the retail industry 004010-that will be published by midyear. The testing is for older transaction sets, and looks only at the ability of trading partners to accept through their translators the "00" designation for 2000. How applications use that 00-once an EDI transaction is accepted and an acknowledgement transaction returned-is outside the scope of the initiative.

Greg Martin, director of product marketing for Sterling Commerce, a Columbus, Ohio-based provider of electronic commerce software products and services, says most EDI formats are Year 2000 compliant, as is Sterling's current EDI software. "More often than not, today's electronic commerce solutions will help solve Year 2000 problems, rather than add to them, because they help an organization map its data to business processes," Martin says.

Sterling Commerce's Year 2000 compliant Gentran family of electronic commerce messaging and mapping software automates and manages the flow of internal and external business transactions. In this sense, says Martin, electronic commerce software tracks exactly where bad data might infiltrate systems.

"The way today's electronic commerce solutions relate to Year 2000 compliance is the same way they relate to setting up a just-in-time manufacturing environment: the software drills down to business processes and data models shared among trading partners," Martin says.

Bob Hoyt, general manager of global markets for System Software Associates (SSA), a Chicago-based ERP vendor, agrees on the benefit of electronic commerce management software.

SSA's BPCS ERP suite offers EC Manager, a rules-based electronic commerce product that integrates EDI and other data received electronically with BPCS.

"There is no error checking for century dating built into EC Manager, but it's Year 2000 compliant, and its mapping capabilities show a manufacturer the interface points with external systems," Hoyt says.

Century-ready solutions

For many manufacturers, moving to compliant ERP systems is the main route to century readiness-and

carries the side benefit of assuring trading partners of compliance. "There is intrinsic value in being able to tell your trading partners that you have a compliant system," Hoyt says. "Manufacturers that have moved to compliant systems early can now benefit from this status."

Collins & Aikman, a Charlotte, N.C.-based supplier to the automotive industry, is rolling out SSA's BPCS v.6 at all 60 of its manufacturing plants. The company began using BPCS in 1990, according to Gary Hoskins, vice president of information services.

When the \$1.8 billion Collins & Aikman acquired an additional 20 locations in 1996, it inherited a mix of systems with Year 2000 problems. Meanwhile, SSA offered the millenium compliant BPCS v.6, and functionality that matched the needs of the company.

"We looked at the other systems we inherited through our acquisitions. None however, were Year 2000 compliant or offered equivalent functionality," Hoskins says. The nearness of 2000 added to the urgency to the implementation, he adds. By year's end, the company will have implemented BPCS v.6 across all its manufacturing operations.

Prove it to me

A growing trend among ERP vendors is to certify their software as Year 2000 compliant, a measure which some contend is the easiest path to proving system readiness.

When New York City-based Kenneth Cole Productions, a maker of footwear, handbags, and menswear, began a search to replace its largely custom-built AS/400-based business applications last year, Year 2000 compliance was a top priority. "Given the time frame of our search, Year 2000 compliance was a must. We knew we either had to implement a compliant package, or program our way out of the problem," says Harry Kubetz, senior vice president of operations. The company selected System 21, an ERP system from JBA International, Rolling Meadows, Ill. System 21 recently gained Year 2000 certification from the Information Technology Association of America (ITAA), an Arlington, Va.-based trade association that offers a Year 2000 certification program for software.

While Kenneth Cole managers were aware JBA was seeking ITAA certification when they examined System 21, "in the meantime, we took their word for it," Kubetz says. "JBA is a major vendor, and it doesn't make sense for them to misrepresent something as crucial as Year 2000 compliance."

The more overriding factor in the decision, Kubetz says, was that Kenneth Cole Productions didn't want to invest in further in-house development to enhance its legacy systems. "We needed enhancements to better manage wholesale inventories," Kubetz says. "While System 21 isn't a perfect fit, we liked the fact that the system is flexible, and that JBA is willing to work with us to enhance it with developments for our industry."

MAPICS Inc., an Atlanta-based ERP vendor, also has obtained ITAA's Year 2000 certification for its software, says Thomas "Billy" W. Ray, vice president of research and development. "More potential customers are looking for assurances regarding century compliance," Ray says. "Our field sales reps generate these requests daily. Now we can show manufacturers the ITAA's certification letter, which carries weight of its own."

Ray says ITAA didn't physically test MAPIC's code. However, he says, "It rigorously examined the documentation our development team used in making the software Year 2000 compliant. It's starting to carry the same weight as ISO 9000 certification for quality."

Jorge Lopez, vice president of strategic planning for Symix, a Columbus, Ohio-based ERP vendor, sees certification as less important than a vendor's track record. "Some potential customers might ask to speak with references if they want outside assurance of our software's Year 2000 compliance," Lopez says. "Additionally, if an ERP vendor is using a Year 2000 compliant development toolset and database, manufacturers can be fairly confident about Year 2000 claims."

Planning and forecasting systems also may be prone to Year 2000 problems, which would in turn generate faulty data for trading partners, says Mike Campbell, president of Demand Management, a St. Louis-based forecasting and distribution resources planning (DRP) software vendor. However, Demand Management's software has been compliant for more than two years.

"Our software is not like an order entry or invoicing system that stores dated information in a database," Campbell says. "Our software is designed as a bucketed system in which planners enter dates for a specific time bucket. Subsequently, we don't have many date-dependent functions in our software, and we use windowing techniques in the places we do use dates."

Demand Management also offers a VMI front end to its DRP system. Campbell says there were more datedependent points to remedy in Demand Management's VMI and DRP software, primarily in two areas: data about customer orders, quantities, and due dates; and information about due dates from purchased goods suppliers and for finished goods coming off the factory floor.

ERP, because it contains production planning functions that generate suggested order releases and purchase orders, can throw off key dates sent to trading partners if the ERP system is not Year 2000 compliant. However, the window of opportunity for getting an ERP system implemented is closing quickly, Lopez says.

"Implementation times vary, but many companies look at a 12-month implementation cycle for ERP," Lopez says. "Considering at least a few months in 1999 are needed to finetune the system, a company might be able to begin an ERP implementation as late as mid-year, and have the system ready by 2000."

"However, CEOs must realize the Year 2000 problem potentially affects all systems, not just ERP. So while it's true a compliant ERP system can solve a big slice of Year 2000 problems, it won't solve everything."

Sidebar:

An approach to supply-chain Year 2000 readiness

Get your own house in order

Start talking with business partners

Develop business plans to deal with external exposure --assess external impact --develop contingency plans --deploy countermeasures

Support a collective approach to solving the problem

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Udo, Godwin J Pickett, Gary C

Industrial Management, v36n2, Page: 6-9, Mar/Apr 1994 (includes Charts)

The numerous benefits of doing business using electronic data interchange (EDI) have caused large companies to accept EDI as a way of life. Large companies such as Ford Motor Co. and Dillard's Department Stores have made EDI conversion mandatory for all their suppliers. Small firms are encountering many problems in fulfilling the EDI handed down by their larger partners. Some of the EDI benefits include: 1. reduced material cost, 2. reduced human error, and 3. improved customer relations. Some of the problems with EDI are: 1. insufficient business volume to justify EDI implementation, 2. hard business times, and 3. resentment of the iron fist approach. In order to convert to EDI, some of the steps small companies should take are: 1. Communicate with trading partners. 2. Analyze alternative networks and select the one that best serves the company. 3. Modify existing computer systems to accommodate EDI. 4. Retrain existing employees.

Electronic Data Interchange (EDI) is the electronic transmission of data (such as purchase orders, invoices, bills, funds and account balances) from a computer system of one company to a computer system of another company without human intervention. This computer-to-computer communication of data replaces the function of the business document transmitted in a standard format. The basic concept of EDI is that once data is entered into a computer system, it should never have to be manually keyed again.

The numerous benefits of doing business using EDI have caused large companies to accept EDI as a way of life. Large companies such as Ford Motor Co. and Dillard's Department Stores have made EDI conversion mandatory for all their suppliers. Currently, the bigger companies are not only demanding that smaller suppliers and customers use EDI, they also dictate what value-added network (VAN) to use. Small firms--some family-owned businesses--are encountering many problems in fulfilling the EDI mandate handed down by their larger partners. Several factors unique to small firms explain why they are reluctant or incapable of converting to EDI. Small firms are often faced with a hard choice--abide by the dictates of their big trading partners at the expense of other things, or be dropped from the vendor list by those big partners. The short-and long-term implications of choosing to use EDI are worth a detailed analysis, especially now that EDI is increasingly becoming a common practice among businesses in the U.S. and abroad.

The impacts of EDI can best be demonstrated by considering how two typical non-EDI trading partners conduct their businesses. Hard copies of purchase orders are generally generated and mailed or faxed to the supplier. The supplying partner will then key the order information into its computer, and using that information, generate hard copies of bills and invoices to the buying partners via a fax machine or by ordinary mail. The buying partner will wait until the goods and bills are received and reconciled with the invoice before mailing a notice acknowledging receipt of the goods. A check covering the cost of the goods or services may be mailed to the supplier several weeks after the initiation of the transaction. In

some cases, the goods arrive at their destination a week or two before their bills and invoices. While waiting for necessary paperwork, the goods have to be stored, preserved and protected from all possible risks. After the documents and goods have been received, it can take another week or two for the money to be transferred from the buying partner's bank to the supplying partner's bank. Within that time, both partners incur significant investment costs in addition to inflated overhead costs. Other less direct costs are also involved in this type of transaction. For example, re-keying the information back and forth into the computers often results in human error and increased labor cost. It can also lead to poor communication and a difficult relationship between the partners.

The purpose of EDI is to synchronize the computer systems of the trading partners and enhance electronic commerce among partners. EDI enhances business transaction speed, accuracy and efficiency. It eliminates the exchange of hard copies and provides for automatic electronic exchange of information from purchase order to payment of bills.

Efforts have been made to establish EDI international standards. At the present time, there are two major committees working toward setting those standards:

- * The Economic Commission for Europe of United Nations (UN/ECE); and
- * The JEDI Coordination Committee in the U S

The question the reader may ask is, "Why do an increasing number of big firms demand their smaller business suppliers and customers to convert to EDI?" Since it is inconvenient and expensive for the host companies to maintain both manual and electronic systems, they prefer all their partners to use EDI. The underlying fact about this technology is that when fixed capital is invested in EDI, benefits begin to accrue in direct proportion with the number of users. The more customers and suppliers participate in the system, the more benefits enjoyed by the host company. The benefits of implementing EDI are convincing evidence and the reason why larger firms do not mince words concerning EDI conversion.

EDI BENEFITS

Many people have advocated EDI as an effective application of information technology that is capable of increasing the productivity level of the nation. Using EDI results in competitive advantages as well as operational benefits for all partners involved. High-quality EDI data can be provided at less cost than that of manual systems. EDI provides a competitive advantage because it enhances financial and managerial control by creating a process standard between two trading partners. It is operationally beneficial because it increases a firm's response time to customers' orders, improves delivery services, decreases pay cycles, lowers clerical costs and decreases data error.

The pressing need for larger companies to implement just-in-time (JIT) or other inventory-reduction programs has, in turn, increased the need for suppliers to become faster and more reliable in response to the ever-changing demands of larger firms. Instant monitoring of the movement of shipments gives clients a sense of security and the ability to control their operations. Clients expect their shipments to be delivered at the right time, in the right quantity and at the right cost. The challenge facing all industries today in the U.S. is increasing output without increasing the workforce. EDI eliminates manual, repetitive clerical work, freeing up critical human resources to handle problems and deal directly with customers. A summary of EDI benefits and problems with implementing it are given as Figure 1. Details of some of the benefits are given below.

- * **REDUCED MATERIAL COST.** EDI provides a reduction in cost through the elimination of printing,

mailing and handling of paper transactions and fewer telephone calls.

* **REDUCED LABOR COST.** EDI allows fewer people to be involved in data entry, which in turn allows more time to be spent on management, sales, customer service and other operations.

* **REDUCED HUMAN ERROR.** The singlepoint data entry requirement of EDI system eliminates the costly delays and human errors associated with re-entry. It also subjects data to programmed controls of consistency and accuracy, providing better and faster response times.

* **FASTER RESPONSE TIME.** EDI enables the company to respond faster to customer demands. Quick response is a critical success factor for clients who implement time-based competition.

* **IMPROVED CUSTOMER RELATIONS.** EDI establishes an intimate relationship between the company and its customers. It provides compatibility for long-term commitment and association. It discourages customers from changing companies by solidifying cooperative processes. EDI can also open up new markets by attracting progressive firms who want to conduct business the modern way.

* **IMPROVED INVENTORY MANAGEMENT.** Since EDI enhances more reliable and timely deliveries, there is no need for companies to keep stock piles of inventory. Inventories are ordered in small lot sizes as need arises, which frees up funds for other uses.

* **SHORTER CYCLE FROM RAW MATERIAL TO CASH.** EDI improves operations in both the manufacturing and service sectors by eliminating delays due to mailing transactions. The time factor between the purchase of raw materials or inventories and when they are converted into cash is drastically reduced, as is the time between when service is rendered and when payment is made.

* **ENHANCE CUSTOMER LOYALTY.** Once suppliers and customers are familiar with the company's EDI system, they become reluctant to switch to other companies since the cost of implementing a new system could be high and new procedures would have to be learned. Therefore, EDI can effectively be used to lock in customers and suppliers and lock out competitors.

FIGURE 1

BENEFITS OF EDI

Fast response to customer demands

Improved customer relations

Reduced delayed delivery

Customer satisfaction

Less human error

Reduced paper cost

Reduced labor cost

Shorter pay cycle

Reduced telephone cost

Reduced mailing cost

Customer loyalty

Price leadership

Increased market share

Goodwill and reputation

Cutting-edge position enhancement

Time-base position enhancement

Identification of potential customers

PROBLEMS FACING SMALL BUSINESSES

Hard business times

Lack of EDI education

Data security concerns

Poor short-term payoff

Front-end investment cost

Insufficient business volume

Standard compliance problems

Extra data entry in some cases

Inevitable changes caused by EDI

Resentment of "iron fist" approach

Difficulty in measuring EDI benefits

The benefits of EDI are not only reported by profit-making organizations, but also by government sectors. For instance, the Department of Defense (DoD) has been so deeply involved with EDI technology that it requires all its suppliers and contractors to implement it. The DoD set up a task force to investigate the benefits it derived from EDI and recommend ways to improve its implementation. Payne and Anderson reported on the findings of the task force, in which they maintained that EDI solves logistics problems in the following ways.

- * Reduces administrative lead time for procurement;
- * Access to industrial bases can be broadened and locked in, which can lead to a good procurement response time;
- * Allows more effective and dynamic control of vendors;
- * Provides short-term, accurate "heads up" to logistics pipelines inside and outside of the department; and
- * Improves handling of unpredictable surges in demand.

The four logistics areas that EDI impacts in the DoD are procurement, transportation, supply and maintenance and repairs. The department has since mandated the use of a common standard of EDI by over 300,000 of its vendors.

Why aren't small businesses lining up at the door of their bigger trading partners to be converted to EDI if the technology yields as many benefits as discussed here. Lance Dailey, the director of EDI implementation at Sears Merchandising, said, "I thought if I said, 'Look, here's how important EDI is to us, and here's what we can do to support you,' I'd have people pounding on my door." The problems facing small companies are so dramatically different from those of big firms that the benefits of EDI appear unattainable to them.

PROBLEMS OF EDI

*** INSUFFICIENT BUSINESS VOLUME TO JUSTIFY EDI IMPLEMENTATION.** Since the benefits of EDI accrue in proportion with volume of transactions, several small firms have little or no chance of benefitting from its use. Some small firms' products are bought by one or two giant firms, so the difference in benefits between EDI and traditional business practices is too small to motivate them to convert to EDI. For example, a small family business in the southeastern U. S. that supplies one type of spark plug for a specific type of lawnmower manufactured by a major automobile company. When the order to convert to EDI was made by the automobile company, the small firm had to decide between going out of business or converting to EDI. The firm was smart enough to convert to EDI, not because of the benefits it hoped to derive from the action--technically there were none in this case--but because of fear of going out of business. This dilemma is common to most small businesses. While large companies may enumerate the advantages of doing business with EDI, small companies understand the reality that there is not much advantage for them, given the cost and inconveniences it entails.

HARD BUSINESS TIMES. Hard economic times, are not conducive to any type of innovative investments. Small companies are nervous and overly cautious when it comes to spending money on technologies that are not absolutely necessary for their operations. Given the number of small businesses that have recently gone bankrupt, we cannot blame the management of small companies for being cautious about new plans and ideas, including EDI conversion.

*** NO SHORT-TERM PAYOFF.** EDI, like other types of information technologies, has a high up-front cost, little or no immediate payoff, and is hard to cost justify. Traditionally small firms favor investments with short payback periods. Unlike big firms, they cannot afford luxuries such as large research and development departments or experimenting with "unknowns." EDI is relatively new, and since small companies think they have efficient, alternative ways of transacting businesses, they resist the order to convert to another system.

* **RESENTMENT OF THE "IRON FIST" APPROACH.** In most cases, small companies are not part of the EDI conversion decision process. They are only told by their bigger trading partners to convert or face the consequence of being discontinued as a supplier. In some cases, the big companies dictate the type of network, the specific hardware and software, and standards to be adopted and the deadline. This hard-nose approach, though effective in forcing the conversion by more trading partners, can inhibit EDI long-term advantages. Some small companies see the action of the big partners as an economic injustice that they lack the power to confront. Huffy Sports' EDI Coordinator, Karlene Walden, represented the feelings of many small businesses when she said "[Sears' mandate] put pressure on me because I wanted to maintain a good trading partnership with them, but at the same time I had other responsibilities that needed my attention."

* **LACK OF EDI EDUCATION.** Many small companies lack basic EDI education from an independent source. The little information they have about EDI comes from their trading partners, which they may receive with doubts. Insufficient knowledge of EDI, its trend and future impact are some of the reasons small companies are not eager to convert to EDI.

* **INEVITABLE CHANGES CAUSED BY EDI.** Fear of change is the main reason for the small firms' unwillingness to convert to EDI. The changes include operational (the way a company does business), administrative (who is responsible for what) and physical changes (types of equipment required and the physical layout). People usually resist change, and since EDI affects significant changes, small companies are reluctant to convert to EDI.

* **CONCERN ABOUT DATA SECURITY.** EDI cuts across organizational borders and increases the chance of unauthorized persons having access to a company's sensitive data. Although steps have been taken by companies and EDI vendors, some small businesses are yet to overcome the fear of jeopardizing their data security.

These problems are real and no one argues the fact that both sides--the larger and smaller partners--are right in their differing perceptions of EDI technology. We contend that if small companies come to grips with two important facts, their EDI implementation task might be lightened. First, EDI is rapidly becoming the way of doing business not only the U.S., but also in other developed countries. Evidence has supported the fact that in the near future, non-EDI companies will lose ground to their competitors as business operations become more automated and EDI becomes the main transaction media. Small firms who do heed this forecast should see the investment in EDI as a necessity for their future survival rather than an unnecessary mandate from a stronger trading partner. Second, if a small company is well-educated about EDI, it will be in a better position to negotiate with its big trading partners in terms of which EDI alternatives and communications network will best serve the needs of both partners. Positional strength is often enhanced by understanding the subject in question. Small companies can only have EDI understanding by becoming interested in the issue. With these two facts in mind, the following guidelines are provided to help small companies tackle the task of deciding to convert to EDI.

EDI CONVERSION GUIDELINES

* **EDUCATE YOURSELF ON EDI.** As stated earlier, the more EDI education top management gets, the more enlightened they become, and the more they are aware of alternative ways of overcoming EDI conversion problems. Some of the ways of getting educated about EDI include literature, seminars, consulting, video tapes and visits to companies that use EDI. Education will dispel unnecessary fears and provide necessary background to enable a company to understand whether or not EDI conversion proposed by its trading partner is of mutual benefit. EDI education will expose management to the multiple EDI alternatives and identify ways that the company can use the technology to its advantage.

* **COMMUNICATE WITH YOUR TRADING PARTNERS.** It takes clear and frequent communication toward the company's trading partners to resolve EDI conversion problems. Without fear, the small firms need to communicate with individuals who are responsible for EDI implementation in the big companies. Communicating with the bigger partner about the small firm's limitations could be the way out of a difficult situation. The small firm should be at liberty to request help or a deadline extension. Keeping silent and suffocating in the situation may forfeit a workable alternative arrangement that works for the mutual advantage of both trading partners.

* **ANALYZE ALTERNATIVE NETWORKS AND SELECT THE ONE THAT BEST SERVES YOU.** During the process of getting acquainted with EDI and the accompanying equipment, the firm can become familiar with various communication networks and their strengths and weaknesses. With the help of a technical assistant, the company should analyze and select a network that is both financially and technically suitable for its business conditions. With a substantiated appeal, the big partner can allow the small partner to use the network of its choice. But without a thorough analysis of the available communications networks, small companies will always depend on the big ones to dictate to them the type of network to be used since the small companies may not even know what they want. There are significant cost differences in EDI operations due to the variation in the network media, even though there is not much difference in performance.

* **IF POSSIBLE, MODIFY YOUR EXISTING COMPUTER SYSTEMS TO ACCOMMODATE EDI.** It is possible that your choice of EDI software can run on your existing computers with little or no modifications. The best action would not be to replace the equipment, but to evaluate its capabilities to determine what modifications are required. Where the existing equipment can be used at least temporarily, the cost of EDI implementation can be drastically reduced to a tolerable level. Where new equipment is absolutely necessary, you should be careful to acquire equipment with sufficient capacity for its present and future needs. It makes economic sense to pay the additional price for expanded capacity at the outset than to have equipment become obsolete within a few years.

* **RETRAIN EXISTING EMPLOYEES.** Look within your company for workers to retrain to operate and maintain the EDI system. Retraining current employees saves costs and reduces worker dissatisfaction caused by EDI implementation.

* **BARGAIN WITH YOUR TRADING PARTNERS FOR DEADLINES AND OTHER HELP, SUCH AS TRAINING AND DATA TRANSFER.** Big trading partners often offer incentive deals to customers who are willing to convert to EDI. Your company should take advantage of such deals, which could be in the form of free training, free EDI software or free data conversion. If no such deals exist, ask for them. Another negotiation can be in the form of deadline extension or a waiver for deadline penalties. Some savings could accrue if a small company negotiates for concessions ahead of time. This point links directly with frequent, clear communications suggested earlier.

* **MANAGE AND EVALUATE THE TECHNOLOGY ONCE IT IS IN PLACE.** Good management is critical for the successful and low-cost operation of EDI. As with other types of assets, an EDI system should be properly managed and controlled. Some of the routine management tasks include keeping track of transactions and checking error log files to make sure documents are received without errors. The system must be evaluated regularly to detect any problems before they disrupt operations.

* **USE THE TECHNOLOGY TO EXPLORE NEW BUSINESSES.** EDI is a strategic tool that can be used to gain new customers and increase market share. Small firms that do their strategic planning homework can discover a new business niche where using EDI can lead to a new service or product within that industry. Instead of resisting EDI conversion, small companies should look for ways to make it work to their advantage.

* SEE THE INVESTMENT AS A STRATEGY FOR YOUR FUTURE SURVIVAL, INSTEAD OF A PUNISHMENT. The secret of being happy with an EDI investment is to perceive the technology as a means of future survival. As mentioned earlier, EDI is becoming the way to do business and compete effectively.

The prevailing feeling among small companies is that their bigger trading partners do not act in their best interest by mandating EDI conversion within strict deadlines. The unwillingness of these small suppliers to convert to EDI is due to a number of factors, including resentment, lack of EDI education, insufficient business volume, fear of uncertainty, and so forth. The authors maintain that the problems and the resistance would be lessened if the small businesses came to terms with the fact that EDI will soon become the leading edge in business transactions. EDI investment should be seen as a strategy for future survival rather than an unnecessary financial injustice from the stronger business partner. There may be another, less expensive way to implementing EDI other than the one dictated by the larger partner. Unless the top management of the small companies are educated about EDI, they will continue to be in a weak position to negotiate with the big companies for the EDI system that best fit their small scale business. The guidelines provided in this article are not a panacea for every situation, but they will be useful in a variety of ways.

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S1 ((forecast?) AND ((identify? OR check? OR find?)(3N)
 (error)))
 S2 PY=((1970:2001))
 S3 S1 and S2
 S3 and ((INVENTORY OR INVENTORIES)(3N)
 (MANAGEMENT OR MANAGING) OR (JIT OR
 S4 JUST(2N)TIME) OR (MANAGING OR CONTROL?
 OR TRACK?)(3N)(MERCHANDISE? ? OR
 PRODUCT? ? OR GOOD? ? OR RESOURCE? ?))
 S5 RD
 S6 SORT /ALL/pd,a

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